

Application No.: 10/761,077

CLAIM AMENDMENTS

1. (Currently amended) An aqueous solution for depositing an inorganic corrosion resistant coating with self-healing properties on a metal substrate, said aqueous solution consisting essentially of comprising:

a film-forming agent, ~~said film-forming agent~~ comprising at least one vanadate salt, wherein said film-forming agent forms said corrosion resistant coating at a first rate;

a supplemental soluble metal anion selected from the group consisting of ferricyanide, anions of iron, anions of molybdenum, anions of tungsten, anions of manganese, anions of boron, and anions of phosphorous, wherein said supplemental soluble metal anion accelerates said first rate thereby causing said corrosion resistant coating to form faster than said first rate; and
a substrate activator, said substrate activator adapted to remove oxides on said metal substrate prior to formation of said corrosion resistant coating.

2. (Original) The aqueous solution according to claim 1 wherein said solution has a pH in the range of from about 1.0 to about 6.0.

3. (Original) The aqueous solution according to claim 1 wherein said metal substrate comprises a metal selected from the group consisting of ferrous metals and non-ferrous metals.

Application No. 10/761,077

4. (Original) The aqueous solution according to claim 1 wherein said metal substrate comprises a metal selected from the group consisting of aluminum, iron, zinc, magnesium, cadmium, and alloys thereof.

5. (Original) The aqueous solution according to claim 1 wherein said film-forming agent is present in a concentration of from about 5 to about 150 mM.

6. (Cancelled).

7. (Original) The aqueous solution according to claim 1 wherein said supplemental soluble metal anion is present in a concentration of from about 1 to about 75 mM.

8. (Currently amended) The aqueous solution according to claim 1 wherein said substrate activator is selected ~~[[form]]~~ from the group consisting of chloride salts and fluoride salts.

9. (Original) The aqueous solution according to claim 1 wherein said substrate activator is present in a concentration of from about 1 to about 50 mM.

10. (Original) A metal object coated with the aqueous solution of claim 1.

11. (Original) The metal object according to claim 10 wherein said aqueous solution is applied to said metal object by a process selected from the group consisting of

Application No. 10/761,077

immersion of said metal object in a bath of said aqueous solution, spraying said aqueous solution on said metal object, and rolling said aqueous solution on said metal object.

12. (New) An aqueous solution for depositing an inorganic corrosion resistant coating with self-healing properties on a metal substrate, said aqueous solution consisting essentially of:

- a film-forming agent comprising at least one vanadate salt, wherein said film-forming agent forms said corrosion resistant coating at a first rate;

- a supplemental soluble metal anion, wherein said supplemental soluble metal anion accelerates said first rate thereby causing said corrosion resistant coating to form faster than said first rate; and

- a substrate activator selected from the group consisting of chloride salts and fluoride salts, said substrate activator adapted to remove oxides on said metal substrate prior to formation of said corrosion resistant coating.

13. (New) The aqueous solution according to claim 12 wherein said solution has a pH in the range of from about 1.0 to about 6.0.

14. (New) The aqueous solution according to claim 12 wherein said metal substrate comprises a metal selected from the group consisting of ferrous metals and non-ferrous metals.

Application No. 10/761,077

15. (New) The aqueous solution according to claim 12 wherein said metal substrate comprises a metal selected from the group consisting of aluminum, iron, zinc, magnesium, cadmium, and alloys thereof.

16. (New) The aqueous solution according to claim 12 wherein said film-forming agent is present in a concentration of from about 5 to about 150 mM.

17. (New) The aqueous solution according to claim 12 wherein said supplemental soluble metal anion is present in a concentration of from about 1 to about 75 mM.

18. (New) The aqueous solution according to claim 12 wherein said substrate activator is present in a concentration of from about 1 to about 50 mM.

19. (New) A metal object coated with the aqueous solution of claim 12.

20. (New) The metal object according to claim 19 wherein said aqueous solution is applied to said metal object by a process selected from the group consisting of immersion of said metal object in a bath of said aqueous solution, spraying said aqueous solution on said metal object, and rolling said aqueous solution on said metal object.